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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/599,901	04/19/2007	Georg Busch	112740-1145	6294
29177	7590	10/31/2007		
BELL, BOYD & LLOYD, LLP			EXAMINER	
P.O. BOX 1135			CAZAN, LIVIUS RADU	
CHICAGO, IL 60690			ART UNIT	PAPER NUMBER
			3729	
			MAIL DATE	DELIVERY MODE
			10/31/2007	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

Application No.

10/599,901

Applicant(s)

BUSCH, GEORG

Examiner

Livius R. Cazan

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 19 April 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 6-12 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 6-12 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 October 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date 10/12/06
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- ☐ Notice of Informal Patent Application
- ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Specification*

1. The disclosure is objected to because of the following informalities: the written disclosure should not contain any references to the claims. See "claim 1" on pages 1 and 2 for example.

Appropriate correction is required.

### *Claim Rejections - 35 USC § 112*

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:  
  
The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
3. **Claims 8 and 12** are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

**Regarding claim 8**, the phrase "the medium [...] is a low cost lacquer variant" renders the claim indefinite because the price of a material is variable. On a given day it may be "cheap", while on another day or at a different store it may be "expensive". Further, it is unclear what is meant by "low cost", since no basis for comparison has been established, i.e. low cost with respect to what? Therefore the claim is indefinite, because it cannot be established exactly what is being claimed.

**Regarding claim 12**, it is believed "150" was meant to read --ISO--. However, further clarification as to what is meant by "ISO" is required.

***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. **Claims 6 and 8** are rejected under 35 U.S.C. 102(b) as being anticipated by Hirose (US6407345 to Hirose et al.).

**Regarding claim 6**, Hirose discloses drilling through-holes (36, Fig. 1B) in a substrate and performing electroless plating to plate the inside of the holes and the substrate (see step (1) in col. 15), etching a strip conductor image into the plated layer (34, Fig. 1C; see step (1) in col. 15), filling the holes with a medium (40, Figs. 2E-2G; see step (4) in col. 15), lacquering the surfaces of the substrate (see Fig. 2H; see step (8) in col. 16), and producing strip conductors (54, Figs. 4N and 4O; see steps (13) and (14) in col. 17) arranged above the through-connections.

**Regarding claim 8, as best understood**, the lacquer certainly is low cost (see rejection under 35 U.S.C. 112, 2<sup>nd</sup> paragraph).

***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. **Claims 6-12** are rejected under 35 U.S.C. 103(a) as being unpatentable over APA (Applicant's admitted prior art) in view of Hirose.

As seen in the figure, APA discloses substantially the same invention as the Applicant except for filling the holes with a medium, thereby allowing circuit patterns to be formed directly above the through hole.

As discussed above, Hirose discloses this limitation.

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the invention of APA by filling the holes with a medium, thereby allowing circuit patterns to be formed above the through holes.

**Regarding claim 7**, APA and Hirose disclose substantially the same invention as the Applicant, except for the medium used to fill the holes and the insulating lacquer being identical.

At the time the invention was made, it would have been obvious to one of ordinary skill in the art to choose a medium and a lacquer suitable for the intended use, since this requires only routine skill in the art. As such, it would have been obvious for one of ordinary skill in the art to utilize the same material for the medium and the lacquer, if such a suitable material exists, because it is more economical to utilize a single material than to utilize two different materials.

**Regarding claims 9, 10, and 12 (as best understood)**, APA teaches forming carbon circuit patterns (step 8, page 5), separating individual circuit boards by means of a milling process (step 10, page 5), as well as utilizing an ISO insulating lacquer (step 7,

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page 4). Note that in view of Hirose it would be obvious to form the carbon strips above the through holes.

**Regarding claim 11**, it would appear both the "Old" method and the "New" method as seen in the figure are applied to through holes in the 20 micron size range (last paragraph on page 3 of the present specification). However, to the extent Applicant disagrees APA discloses this limitation, at the time the invention was made, it would have been an obvious matter of engineering design choice to a person of ordinary skill in the art to apply the method of APA and Hirose to through-holes of this size, because Applicant has not disclosed that this particular through-hole size provides an advantage, is used for a particular purpose, or solves a stated problem that would not be provided or solved by any other through hole size. The through hole size depends on the particular design of the circuit, and applying the method of APA and Hirose to through-holes of say a 140 micron diameter would be as obvious applying the method to a hole with a 20 micron diameter and vice versa, since the process steps would be identical, irrespective of the hole diameter.

### ***Conclusion***

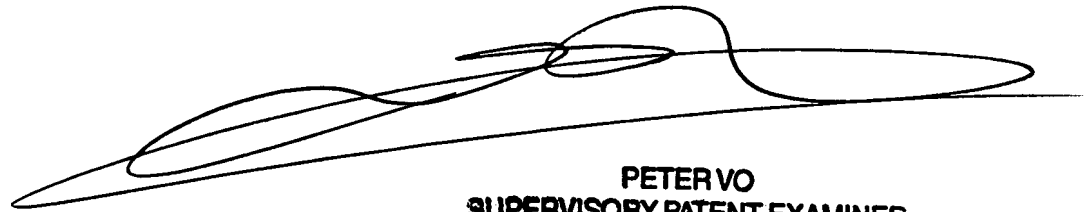
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Livius R. Cazan whose telephone number is (571) 272-8032. The examiner can normally be reached on 8:00AM-4:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Peter Vo can be reached on (571)272-4690. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/LRC/ 10/25/2007

A handwritten signature in black ink, consisting of several loops and a long horizontal stroke at the end.

**PETER VO  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 3700**